

Amendments to the Drawings

Figure 3 has been amended to include a fuzzy logic subsystem as is well described in the specification. Continuation paragraph [0011] states: "The fuzzy logic detection technique 61 that may be used in the receiver 50 could provide greater user separation through optimizing code division in the headphone receiver." Moreover, Continuation paragraph [0010] discloses "the spread spectrum modulated signal from transmit antenna 24 may be received by receiving antenna 52 and then processed by spread spectrum direct conversion receiver or module 56 with a receiver code generator 60 that contains the same transmitted unique code". Further support for the amendment is found in the Parent application (App. No. 10/027,391) (See Parent ¶ [0014]; ". . . a unique code word that spreads the signal spectrum.") Such amendment demands removal any 35 U.S.C. § 112 rejections for enablement of the instant invention. Because this element is found in both the Parent and instant application's specification, it does not constitute new matter.

ATTACHMENTS: 1 REPLACEMENT SHEET FOR FIGURES 2 AND 3.

REMARKS

Applicant would like to thank Andrew Flanders for discussing the claims and prosecution of the application on April 24, 2008.

Claims 1-18, 35-36, and 39-40 were previously cancelled in this application. Claims 19-34, 37, 38, and 41-59 stand rejected and have been appealed. Pursuant to 37 C.F.R. 1.114(d) the filing of this Request for Continued Examination removes the instant application from appeal. Claims 19, 30, 33, 34, 43, 44, 52, 53, 54, 55, 57, and 59 have been amended to further clarify the scope of the invention for the reasons set forth below. Claims 27, 28, 41, 42, 47, 48, 56, and 58 have been cancelled without prejudice. Moreover, new Claims 60 and 61 have been added with additional limitations that address the concerns discussed in the Advisory Action of October 11, 2007 and the Examiner's Answer of March 13, 2008.

Arguments made in Applicant's Appeal Brief Filed December 22, 2007

All arguments made in Applicant's Appeal Brief filed December 22, 2007 are herein incorporated by reference as part of this submission under 37 C.F.R. 1.114.

Further Argument Regarding the Rejections Under 35 U.S.C. § 112, first paragraph of Claims 30 and 53

As stated above, all arguments made in Applicant's Appeal Brief filed on December 22, 2007 are incorporated by reference. Moreover, because claims 56 and 58 have been cancelled without prejudice in the instant amendment, the enablement rejection as it applies to Claims 30 and 53 is discussed. This rejection is respectfully traversed.

In order to make a rejection under 35 U.S.C. § 112, first paragraph the examiner has the burden of establishing a reasonable basis to question the enablement provided for the claimed invention. In re Wright, 999 F.2d 1557, 1562 (Fed. Cir. 1993) (examiner must provide a reasonable explanation as to why the scope of protection provided by a claim is not adequately enabled by the disclosure). The evidence of enablement provided by appellant need not be conclusive, it merely needs to be convincing to one skilled in the art. In re Brandstadter, 484 F.2d 1395, 1406-07 (C.C.P.A. 1973). Moreover, “[p]atent

documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners” Verve LLC v. Crane Cams Inc., 311 F.3d 1116, 65 USPQ2d 1051, 1053-54 (Fed. Cir. 2002).

Applicant respectfully asserts that one skilled in the art would know where the fuzzy logic detection sub-system would operate within the present invention (Parent Application No. 10/027,391, hereafter “Parent”; and Continuation-in-Part Application No. 10/648,012, hereafter “Continuation”). Parent paragraph [0014] states “a unique code word that spreads the signal spectrum.” Thus, it is clear that the same spread spectrum code word used within transmitter 20 to spread the signal spectrum would be used to despread the spread spectrum signal in receiver 50. As reiterated below in the argument regarding application of the Benthin reference (U.S. Patent No. 5,790,595), correlation occurs prior to carrier, or spread spectrum, demodulation. One skilled in the art would understand that the spreading code word does not exist after the despreading process, therefore, any signal processing (i.e., fuzzy logic operation) that is performed on the unique code word in the receiver must occur prior to the despreading that takes place within the spread spectrum receiver.

Further, Continuation paragraph [0011] states: “The fuzzy logic detection technique 61 that may be used in the receiver 50 could provide greater user separation through optimizing code division in the headphone receiver.” This discloses that the application of code division optimization, in the context of the present invention, is applicable to the intended and unintended code words. Moreover, because the code words should not exist after despreading, then the fuzzy logic operations must occur prior to despreading. Thus, one skilled in the art would ascertain, based on the disclosures in the present application, that the fuzzy logic detection sub-system is contained within the direct conversion receiver (Continuation ¶ [0010] “the spread spectrum modulated signal from transmit antenna 24 may be received by receiving antenna 52 and then processed by spread spectrum direct conversion receiver or module 56 with a receiver code generator 60 that contains the same transmitted unique code”; and ¶ [0009] “fuzzy logic detection may be used to optimize reception of the received user code”). Based on the disclosures

in the text of the specification (See id.), Figure 3 has been amended to further demonstrate the placement of the fuzzy logic sub-system (Figure 3; 21).

It is well known by those skilled in the art that a typical direct conversion receiver consists of mixers, amplifiers, filters, analog-to-digital converters and a digital signal processor (DSP). After reviewing the specification, one skilled in the art would realize that the DSP of the direct conversion receiver is host to the fuzzy logic software operations. Fuzzy logic is adequately described and enabled by the specification and drawings. As such any rejection under 35 U.S.C. § 112 is in error and should be removed.

Further Argument Regarding the Rejections Under 35 U.S.C. § 103(a) that Claims 30-32 are Obvious by reference to Lindemann (U.S. Patent Application No. 2004/0223622) in view of Sato (U.S. Patent No. 4,790,637) in view of Benthin (U.S. Patent No. 5,790,595)

As previously outlined, all arguments made in Applicant's Appeal Brief filed on December 22, 2008 are incorporated by reference. Beyond argument made in that filing, Applicant urges that Claims 30-32 cannot be obvious in view of Benthin (U.S. Patent No. 5,790,595) for the following reasons.

Throughout Benthin probability calculations are disclosed (Claims 1, 3, 6, 7; and col. 3 lns. 15, 17-20, 44). By contrast, the present invention discloses fuzzy logic operations (Continuation ¶s [0013]-[0015]). Benthin utilizes probability to deal with the uncertainty of occurrence of well-defined events (Claim 1 “ . . . signals representing a defined group of stored data bits; . . .”), whereas the present invention utilizes fuzzy logic to deal with degrees of occurrence of ill-defined events (Continuation ¶ [0009] “fuzzy logic detection may be used to optimize reception of the received user code”; and Parent ¶ [0016] “Other code words from wireless digital audio systems 10 . . . as noise to a particular audio receiver 50”). The intended unique code word sequence of the present invention experiences many ill-defined noise effects due to the wireless channel, some of which include unintended unique code word sequences. The implementation of fuzzy logic aids in suppressing certain noise components allowing a user to listen to music free from interference of other users of similar wireless devices. Benthin cannot accomplish

this through groups of stored data bits. The combination of Lindemann and Sato neither describes nor suggests to one skilled in the art to create and implement a fuzzy logic subsystem for wireless transmission of music as has been accomplished in the present invention.

Furthermore, Benthin specifically demodulates the carrier (or spread spectrum signal) first and then applies his method (Fig. 1, block 12 and col. 2 lns. 4-5 “The demodulator 11 carries out carrier demodulation and passes the demodulated signal to the computer unit 12”). In contrast, in the present invention (Parent and Continuation) the correct user codeword, embedded within the transmitted spread spectrum signal, is detected prior to carrier, or spread spectrum, demodulation (See Continuation Figure 3, and [0010]). It is well known in the art that spread spectrum signals are pseudorandom and have noise-like properties. Benthin’s method is applied to digital information data that typically remains after spread spectrum demodulation, and does not resemble spread spectrum signal characteristics in the wireless channel noise environment. Prior to carrier, or spread spectrum, demodulation the codeword is subjected to the harsh wireless channel noise environment (Parent ¶ [0016] “Other code words from wireless digital audio systems 10 may appear as noise to a particular audio receiver 50. This may also be true for other device transmitted signals operating in the wireless digital audio system 10 spectrum”). Certain harsh wireless channel noise components are not present, at least in its original form, after carrier, or spread spectrum, demodulation in the present invention. Note, “other code words” as described in the Parent are unintended code words (See Parent ¶ [0016]).

Parent paragraph [0014] discloses “. . . a unique code word that spreads the signal spectrum.” This clarifies that the unique code word is used to spread the spread spectrum signal in the transmitter. Similarly, the unique code word is utilized within the receiver headphones to despread the spread spectrum signal (See Continuation ¶ [0010]). It is well known by those skilled in the art, that the despreading takes place within the spread spectrum correlator. The spread spectrum correlator in a spread spectrum receiver is the point at which interference (or noise) signals due to other code words are not permitted to pass. Within the present invention, the unique user codeword specific to a particular user is detected out of other code words from wireless digital audio systems 10 prior to spread

spectrum demodulation (See Continuation ¶ [0010]). As is well known, correlation occurs prior to spread spectrum (or carrier) demodulation within the receiver. So, as any person skilled in the art would deduce, any signal processing applied to the unique code word must take place before the despreading because the code word does not exist after despreading of the spread spectrum (or carrier) signal.

The present invention detects the intended unique user code word, out of noise causing unintended unique user code words, prior to spread spectrum demodulation (Continuation ¶ [0010]: “Other code words from wireless digital audio systems 10 may appear as noise to the audio receiver 50). The process aids in suppressing interference from other wireless digital audio system users (i.e. other unintended unique code words). Benthin’s system does not, and can not, account for unintended spread spectrum code words because, as stated previously, despreading by code word correlation has already taken place prior to spread spectrum demodulation. Benthin is silent in regards to selecting an intended unique code word (that spreads the signal spectrum) prior to spread spectrum demodulation while the intended unique code word is subjected to noise from other unintended unique code words. Therefore, for at least the reasons stated, Benthin does not teach fuzzy logic detection, nor teach fuzzy logic detection, prior to spread spectrum demodulation, of a unique user spreading code word in the presence of noise due to other unique user code words. The limitations of Benthin do not make the instant invention a mere change in form, or degree; the present invention has solved a problem with a novel solution, and cannot be obvious in light of Benthin, Lindemann and Sato. Smith v. Nichols, 88 U.S. 112, 118-119 (1875). Moreover because of both the argument above, and that Lindemann and Sato cannot be combined with Benthin to obviate Claims 30-32 of the present invention, the rejection should be removed.

Support for Amendments to the Specification

Amendments to the specification do not constitute new matter and further support the removal of any rejections under 35 U.S.C. § 112, first paragraph for failing to comply with the enablement requirement. For example, the amendment in paragraph [0003] finds support from paragraph [0016] of the Parent specification (“. . . may also be true for other device transmitted signals operating in the wireless digital audio system 10

spectrum.") Further support for the amendment is found in the same paragraph ([0016] of the Parent): "Other code words from wireless digital audio systems 10 . . . to a particular audio receiver 50," because it follows the logic from Parent paragraph [[0014] stating ". . . a unique code word that spreads the signal spectrum" that any code word (that spreads the signal spectrum) from any other wireless digital audio system 10 that is seen by the receiver 50 is transmitted by another transmitter 20. The amendment to paragraph [0010] of the instant application to include "other device transmitted" uses the same support and is not new matter.

The amendment to paragraph [0010] of the instant application to include the "direct conversion receiver or module 56" is not new matter. Support for this insertion is clearly found in the Parent (¶ [0015] "The received spread spectrum signal may then be communicated to a 2.4 GHz direct conversion receiver 56. The direct conversion receiver 56 may provide a method for down converting the received signal . . ."). Thus, this amendment contains no new matter.

Moreover, the amendment to paragraph [0011] adding the language to include operation of the present invention in a shared space is clearly supported in the prosecution history of the instant application (See ¶ [0004] of the instant application as filed: "There is a need for a battery powered simple connection system for existing audio player devices, to allow wireless transmission to a headphone receiver that accomplishes private listening to multiple users occupying the same space."). The above insertion does nothing more than emphasizes the advantages of the present invention that have already been disclosed and described, it is not new matter.

The amendments made to paragraph [0018] are similarly supported. The additional language describing the present invention's ability to provide a user with independent music listening in the presence of multiple independent digital transmitters and receivers in the same shared space is supported (See *id.*). This language further emphasizes and describes the novelty and application of the instant invention and does not constitute new matter.

In sum, none of the amendments made to the specification constitute new matter. Each amendment is supported by either or both the Parent application or the instant application, either in its present form or in the prosecution history. These amendments

have been made for the purpose of further disclosing and describing the novelty and advantages of the present invention and should be allowed. These amendments further substantiate the need to remove previous rejections for failing to comply with the enablement requirement under 35 U.S.C. § 112, first paragraph.

Amendments to the Claims and Additional Claims are Not New Matter and Overcome Rejections for (1) Failing to Comply with the Enablement Requirement under 35 U.S.C. § 112, first paragraph, (2) Anticipation under 35 U.S.C. § 102(e), and for (3) Obviousness under 35 U.S.C. § 103(a)

*Amendments to the Claims and Addition of Claims 60 and 61
are Not New Matter*

Claims 19, 30, 33, 34, 43, 44, 52-55, 57, and 59 have been amended. Claims 60 and 61 have been added to the instant application. The amendments further disclose the present invention and are supported by the specification and drawings of the Parent and Continuation of this application. Specifically, Claims 19, 33, 34, 43, 44, 53-55, 57 and new Claim 60 describe “utilizing an embedded fuzzy logic detector wherein the fuzzy logic detector activates fuzzy logic rules and performs a defuzzification operation in response to a received unique user code to enhance detection of the unique user code”. This language is derived specifically from the instant application (See Continuation ¶ [0005]: “Fuzzy logic detection may be used to enhance user code bit detection during decoding of the transmitted audio signal.”; ¶ [0013]: “The fuzzy logic detection sub-system 61 may measure the degree to which a high/low bit occurs in the user code vector, which produces a low probability of bit error in the presence of noise. The fuzzy logic detection sub-system 61 may use a set of if-then rules to map the user code bit inputs to validation outputs.”; See also Figure 3, 61). This additional language is well-supported.

Claims 19, 30, 33, 34, 43, 44, 52-55, 57, 59 and new Claims 60 and 61 contain language directed to the present invention’s ability to maintain independent music transmission and reception when operated in a shared space containing similar devices. This language is clearly supported by the instant application (See ¶ [0005]: “provides private listening without interference from other users or wireless devices”; See ¶ [0003] of the instant application as filed on August 26, 2003: “for wireless transmission and

reception of audio music for private listening to multiple users occupying the same space.”). The amendments described above are not new matter and should be entered.

*(1) Amendments to Claims 30 and 53 Further Support Removal of the Rejection
for Failing to Comply with the Enablement Requirement under
35 U.S.C. § 112, first paragraph*

Claims 30 and 53 currently stand rejected under 35 U.S.C. § 112, first paragraph as nonenabling. In addition to the arguments provided in the Appeal Brief filed December 22, 2007, and the arguments asserted above in these Remarks, the amendments made to these Claims further support the removal of this rejection. Claims 30 and 53 as amended clearly disclose and claim that the operation of the present invention allows a user independent listening of music in the presence of other users of wireless transmitters and receivers. Claim 53 contains the well-supported language describing the functioning of the fuzzy logic sub-system. Although Applicant has clearly disclosed and described the fuzzy logic system such that one of ordinary skill in the art would be able to practice the invention without such amendment (see argument above and in the Appeal Brief pgs. 22-24), these amendments further show enablement. The rejection for nonenablement should be removed.

*(2) Amendments to Claims 33 and 34 Further Compels Removal of the Rejection
under 35 U.S.C. § 102(e)*

Claims 33 and 34 have been rejected as anticipated by Lindemann. In order for a claim to be anticipated by prior art, each of the claimed elements must be taught. W.L. Gore & Assocs. V. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983). Applicant maintains the argument previously presented and especially those contained in the Appeal Brief. Moreover, the amendments made in this submission further disclose the fuzzy logic sub-system. Because Lindemann does not teach this element, the rejection should be removed.

*(3) Amendments to Claims 43 and 52 Further Requires Removal of the Rejection
for Obviousness under 35 U.S.C. § 103(a) of Lindemann in view of Sato*

Claims 43 and 52 stand rejected as obvious in view of Lindemann and Sato. In addition to the arguments previously made, and in particular those presented in the Appeal Brief, the instant amendments to Claims 43 and 52 further describe and disclose

the ability of the present invention to provide a user with independent music reproduction with a wireless transmitter and receiver while in the presence of other wireless transmitters and receivers occupying the same shared space. Lindemann's ability to provide users independent listening in separate rooms and Sato's anti-aliasing filter would not lead one skilled in the art to develop Applicant's present invention. The mechanisms and use of the cited prior art and the instant application are disparate and further necessitate the removal of the rejection of Claims 43 and 52.

Amendments to Claim 53 Further Necessitates Removal of the Rejection for Obviousness under 35 U.S.C. § 103(a) of Lindemann in view of Sato in view of Benthin

In addition to the argument above for the removal of Benthin, and the argument contained in the Appeal Brief, amendment of Claim 53 further removes any rejection under 35 U.S.C. § 103(a). Neither Lindemann, Sato, nor Benthin anticipate or even suggest the use of a fuzzy logic sub-system that performs a defuzzification operation, which allows the operation of the present invention in a shared space with multiple users of wireless devices. The rejection should be removed.

Amendments to Claims 54, 55, 57, and 59 Further Dictates the Removal of the Rejection for Obviousness under 35 U.S.C. § 103(a) of Lavelle

In addition to arguments previously made and contained within the Appeal Brief, amendments to Claims 54, 55, 57 and 59 further urge the removal of the obviousness rejection. The amendments further disclose and describe the implementation of the fuzzy logic sub-system and the present invention's functionality within a shared space with other wireless device users. Because Lavelle does not suggest such operation, the rejection should be removed.

Conclusion

In view of the arguments supplied in the Appeal Brief, and in these Remarks, it is respectfully requested that all amendments be entered, and that the rejections be reversed.

Respectfully Submitted,



Megan E. Lyman, Registration No. 57,054
Lyman Patent Services
1816 Silver Mist Ct.
Raleigh, NC 27613
(919) 341-4023
(919) 341-0271 (fax)
melyman@lymanpatents.com

Date: April 29, 2008